Amendments to the Claims

1. (currently amended) Switching element for modifying ~~the~~ electric resistance comprising:

a. at least one high temperature superconductor; and

b. ~~means~~ an irradiation assembly for irradiating electromagnetic ~~high frequency~~ energy in at least one of the radio frequency range and the microwave frequency range onto the at least one high temperature superconductor.

2. (currently amended) Switching element according to claim [[1]] 27, wherein the high temperature superconductor is provided as a thin layer of a high temperature superconductor.

3. (currently amended) Switching element according to claim [[1]] 27, wherein the electromagnetic energy has a ~~high~~ frequency ~~is~~ in the MHz-range ~~and in particular less than 200 MHz~~.

4. (currently amended) Switching element according to claim [[1]] 27, wherein the ~~means for irradiating the electromagnetic high frequency comprise~~ irradiation assembly comprises at least one coil arranged close to the at least one high temperature superconductor.

5. (previously presented) Switching element according to claim 4, wherein the coil is provided as a flat coil arranged on the high temperature superconductor.

6. (previously presented) Switching element according to claim 4, wherein the coil is manufactured from a superconducting material.

7. (currently amended) Switching element according to claim [[1]] 27, wherein the ~~means irradiate~~ irradiating assembly outputs the electromagnetic ~~high frequency~~ energy in the form of at least one pulse.

8. (original) Switching element according to claim 7, wherein the time length of the pulse is between 1 µs and 1 s.

9. (original) Switching element according to claim 7, wherein the time length of the pulse is in the range of a few milliseconds.

10. (currently amended) Current limiter for limiting a ~~the~~ maximally allowed current in an electric circuit comprising:

a. a switching element according to ~~one of the claims 1 to 9~~ claim 27; and

b. means for triggering the irradiation of electromagnetic ~~high frequency~~ energy in response to a ~~the~~ detection that the maximally allowed current is exceeded.

11. (previously presented) Current limiter according to claim 10, wherein the switching element remains in a resistive state after triggering the irradiation.

12. (currently amended) Current limiter according to claim 10, further comprising means for cooling which ~~bring~~ brings the high temperature superconductor of the switching element ~~back~~ into a superconducting state after turning off the electromagnetic irradiation.

13. (currently amended) Magnetic energy storage comprising:

a. a magnetic coil for storing energy;

b. a switching element according to ~~one of the claims 1 to 9~~ claim 27, wherein

c. the switching of a switching element leads to a decoupling of the stored energy.

14. (currently amended) Magnetic energy storage according to claim 13, wherein the switching element is arranged as points for ~~a current~~ directing current in the normal conducting state ~~the current~~ to an external consumer.

15. (currently amended) Flow pump for loading an inductivity ~~(30)~~ with current, comprising:

a. means for providing an alternating voltage;

b. a first and a second switching element according to ~~one of the claims 1 to 9~~ claim 27, wherein

c. the first and the second switching ~~element~~ elements are arranged parallel to the inductivity and are alternatingly operable to stepwise increase the current in the inductivity.

16. (currently amended) Flow pump according to claim 15, wherein the means for providing an alternating voltage ~~comprise~~ comprises a transformer and wherein a ~~the~~ primary coil of the transformer is thermally isolated from a ~~the~~ secondary coil of the transformer.

17. (currently amended) Flow pump according to claim 15, wherein the alternating voltage has a frequency of 20 Hz and a ~~the~~ closing time of the switching ~~element~~ elements is approximately 15 ms.

18. (currently amended) Rectifier for rectifying an ~~the~~ alternating current of an alternating current source comprising:

a. at least one first switching element according to ~~one of the claims 1 to 9~~ claim 27;

b. at least a second switching element according to ~~any of the claims 1 to 9~~ claim 27, wherein

c. the first and the second switching ~~element~~ elements are arranged parallel to a direct current output and can be triggered in antiphase.

19. (currently amended) Rectifier according to claim 18, wherein the alternating current source comprises a transformer and wherein a ~~the~~ primary coil of the transformer is thermally isolated from a ~~the~~ secondary coil of the transformer.

20. (currently amended) Inverted rectifier for inverse rectifying a direct voltage of a direct current source, comprising:

a. at least one first switching element according to ~~one of the claims 1 to 9~~ claim 27;

b. at least a second switching element according to ~~one of the claims 1 to 9~~ claim 27, wherein

c. the first and the second switching ~~element~~ elements are arranged parallel to the direct current source and can be triggered in antiphase.

21. (currently amended) Inverted rectifier according to claim 20, wherein ~~further~~ a transformer is arranged for decoupling the alternating voltage and wherein a ~~the~~ primary coil of the transformer is thermally isolated from a ~~the~~ secondary coil of the transformer.

22. (currently amended) Method for switching ~~at~~ a high temperature superconductor comprising ~~the following steps~~:

a. providing ~~a~~ the high temperature superconductor in it's a superconducting state; and

b. irradiating the high temperature superconductor with ~~an~~ electromagnetic ~~high frequency~~ energy in at least one of the radio frequency range and the

microwave range until the high temperature superconductor switches into a ~~the~~ normal conducting state.

23. (currently amended) Method according to claim [[22]] 29, wherein the high temperature superconductor is a thin layer of a high temperature superconductor.

24. (currently amended) Method according to claim 22, wherein the electromagnetic ~~high frequency is~~ energy has a frequency in the MHz range ~~, preferably less than 200 MHz~~.

25. (currently amended) Method according to claim [[22]] 29, wherein the ~~high frequency~~ electromagnetic energy is irradiated as one or more pulses.

26. (original) Method according to claim 25, wherein the time length of the pulses is in the range of 1 µs to 1 s.

27. (new) Switching element according to claim 1, wherein the electromagnetic energy has a frequency of 10 MHz to 800 MHz.

28. (new) Switching element according to claim 27, wherein the frequency is less than 200 MHz.

29. (new) Method according to claim 22, wherein the electromagnetic energy has a frequency of 10 MHz to 800 MHz.

30. (new) Method according to claim 29, wherein the frequency is less than 200 MHz.